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CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103			EXAMINER CROWELL, ANNA M	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/807,774	<b>Applicant(s)</b> MAEDA ET AL.	
	<b>Examiner</b> Michelle Crowell	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 12, 13 and 20-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/08</u>   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 1-11 and 14-19 are finally rejected. Claims 12-13 and 20-42 are withdrawn.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 6-7, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuda et al. (JP 56-005975A).

Referring to the abstract and Drawing 1, Fukuda et al. discloses a thin film forming apparatus comprising: a first electrode 9 having a first discharge surface and a second electrode 10 having a second discharge surface, the first discharge surface facing opposite to the second discharge surface to form a discharge space; a gas supply unit 20 for supplying a gas including a thin film formation gas to the discharge space; a power source 11 for discharging and activating the gas by applying a high frequency electric field across the discharge space; and a film transporting mechanism 13 for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas, wherein a thin film is formed by exposing a substrate 12 to the activated gas and, the protecting film is transported in contact with at least one of the first discharge surface and the second discharge surface and with at least a part of a surface other than the discharge surface which continues to

Art Unit: 1792

the discharge surface.

With respect to claim 2, the thin film forming apparatus of Fukuda et al. further includes wherein the film transporting mechanism 13 transports the protecting film, in contact with the discharge surface of the second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface. (Drawing 1).

With respect to claim 6, the thin film forming apparatus of Fukuda et al. further comprising a substrate transporting mechanism 12 for transporting the substrate in contact with the discharge surface of the first electrode 9 (Drawing 1).

With respect to claim 7, the thin film forming apparatus of Fukuda et al. further includes wherein the substrate transporting mechanism 12 transports the substrate in a state in which the substrate contacts the discharge surface of the first electrode, after the substrate transporting mechanism makes the substrate contact the surface other than the discharge surface, which continues to the discharge surface of the first electrode (Drawing 1).

With respect to claim 19, the thin film forming apparatus of Fukuda et al. further includes wherein a width of the protecting film is set to be wider than the discharge space (Drawing 1).

3. Claims 1-3 and 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Oishi et al. (J.P. 2003229299A).

Art Unit: 1792

Referring to Drawing 2 and paragraphs [0069]-[0078], Oishi et al. discloses a thin film forming apparatus comprising: a first electrode 3 having a first discharge surface and a second electrode 2 having a second discharge surface, the first discharge surface facing opposite to the second discharge surface to form a discharge space (par.[0077]-[0078]); a gas supply unit for supplying a gas including a thin film formation gas to the discharge space (par.[0078]); a power source 5 for discharging and activating the gas by applying a high frequency electric field across the discharge space (par.[0078]); and a film transporting mechanism 4 for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas, wherein a thin film is formed by exposing a substrate 1 to the activated gas and, the protecting film is transported in contact with at least one of the first discharge surface and the second discharge surface and with at least a part of a surface other than the discharge surface which continues to the discharge surface (par.[0078]).

With respect to claim 2, the thin film forming apparatus of Oishi et al. further includes wherein the film transporting mechanism 4 transports the protecting film, in contact with the discharge surface of the second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface. (Drawing 2).

With respect to claim 3, the thin film forming apparatus of Oishi et al. further includes wherein the first electrode 3 and the second electrode 2 generate the high frequency electric field in the discharge space under an atmospheric pressure or a pressure near to the atmospheric

Art Unit: 1792

pressure (par.[0076]).

With respect to claim 19, the thin film forming apparatus of Fukuda et al. further includes wherein a width of the protecting film is set to be wider than the discharge space (Drawing 2).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-3, 6-7, 10-11, 14, 16 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (J.P. 2002-339075) in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A).

Referring to Drawing 1 and paragraphs [0025]-[0027], Murakami et al. discloses

Art Unit: 1792

a thin film forming apparatus comprising: a first electrode 25 having a first discharge surface and a second electrode 24 having a second discharge surface, the first discharge surface facing opposite to the second discharge surface to form a discharge space (par.[0027]); a gas supply unit 30a-30k for supplying a gas including a thin film formation gas to the discharge space (par.[0027]); and a power source 80 for discharging and activating the gas by applying a high frequency electric field across the discharge space (par.[0027]); and wherein a thin film is formed by exposing a substrate F to the activated gas (par.[0027]).

Murakami et al. fails to teach a film transporting mechanism for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas

Referring to the abstract of Fukuda et al. or paragraph [0078] of Oishi et al., Fukuda et al. or Oishi et al. teaches a thin film forming apparatus using a film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas and prevent the thin film from pollution. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the first electrode and the second electrode of Murakami et al. with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution.

With respect to claim 2, the thin film forming apparatus of Murakami et al. in view of Fukuda et al. or Oishi et al. further includes wherein the film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) transports the protecting film, in contact with the discharge surface of the second electrode and with at least a part of the surface other than the discharge

Art Unit: 1792

surface, which continues to the discharge surface second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface. (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

With respect to claim 3, the thin film forming apparatus of Murakami et al. further includes wherein the first electrode 25 and the second electrode 24 generate the high frequency electric field in the discharge space under an atmospheric pressure or a pressure near to the atmospheric pressure (abstract).

With respect to claim 6, the thin film forming apparatus of Murakami et al. further comprising a substrate transporting mechanism 21, 22 for transporting the substrate in contact with the discharge surface of the first electrode 25 (Drawing 1).

With respect to claim 7, the thin film forming apparatus of Murakami et al. further includes wherein the substrate transporting mechanism 21, 22 transports the substrate in a state in which the substrate contacts the discharge surface of the first electrode 25, after the substrate transporting mechanism makes the substrate contact the surface other than the discharge surface, which continues to the discharge surface of the first electrode (Drawing 1).

With respect to claim 10, the thin film forming apparatus of Murakami et al. wherein the second electrode 24 is formed of a plurality of small electrodes (Murakami et al.-Drawings 1 & 2); and with respect to the film transporting mechanism is provided to each of the small electrodes, it would have been obvious to one of ordinary skill in the art at the time of the



Art Unit: 1792

invention to provide at least one of the each of the small electrodes of Murakami et al. with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution (abstract of Fukuda et al. or paragraph [0078] of Oishi et al.).

With respect to claim 11, the thin film forming apparatus of Murakami et al. wherein the small electrodes 24 are fixed (Murakami et al.-Drawings 1 & 2); and with respect to the film transporting mechanisms transport the protecting films while rubbing the protecting films against the surfaces of the small electrodes, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the each of the small electrodes of Murakami et al. with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution (abstract of Fukuda et al. or paragraph [0078] of Oishi et al.).

With respect to claim 14, the thin film forming apparatus of Murakami et al., wherein the gas supply unit 30a-30k is disposed so as to supply the gas to the discharge space through a flow path formed as an interval between a first small electrode among the plurality of the small electrodes and a second small electrode adjoining to the first small electrode (Murakami et al.-Drawings 1 & 2, par.[0027]); and with respect to the film transporting mechanisms of each of the first small electrode and the second small electrode transports the protecting films, in contact with a surface of one of the small electrodes forming the flow path, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the each of the small electrodes of Murakami et al. with a film transporting mechanism as taught by Fukuda

Art Unit: 1792

et al. or Oishi et al. in order to prevent the thin film from pollution (abstract of Fukuda et al. or paragraph [0078] of Oishi et al.).

With respect to claim 16, the thin film forming apparatus of Murakami et al. in view of Fukuda et al. or Oishi et al. further includes wherein the film transporting mechanism of each of the first small electrode and the second small electrode transports the protecting film to the surface of the small electrode forming the flow path, after the film transporting mechanism contacts the protecting film with at least a part of the gas supply unit. It should be noted that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the each of the small electrodes of Murakami et al. with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution (abstract of Fukuda et al. or paragraph [0078] of Oishi et al.).

With respect to claim 19, the thin film forming apparatus of Murakami et al. in view of Fukuda et al. or Oishi et al. further includes wherein a width of the protecting film is set to be wider than the discharge space (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (J.P. 2002-339075) in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A) as applied to claims 1-3, 6-7, 10-11, 14, 16 and 19 above, and further in view of Achtner et al. (U.S. 5,652,022).

Art Unit: 1792

The teachings of Murakami et al. in view of Fukuda et al. or Oishi et al. have been discussed above.

Murakami et al. in view of Fukuda et al. or Oishi et al. fail to teach a heating equipment for heating the protecting film.

Referring to Figure 1 and column 2, lines 10-42, Achtner et al. teaches a thin film forming apparatus wherein a heating equipment for heating the protecting film is used to prevent undesired film from accumulating on the protecting film. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Murakami et al. in view of Fukuda et al. or Oishi et al. with a heating equipment for heating the protecting film as taught by Achtner et al. since this would prevent undesired film from accumulating on the protecting film and hence prevent contamination of the substrate.

8. Claims 8-9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (J.P. 2002-339075) in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A) as applied to claims 1-3, 6-7, 10-11, 14, 16 and 19 above, and further in view of Nakamura et al. (U.S. 6,489,585).

The teachings of Murakami et al. in view of Fukuda et al. or Oishi et al. have been discussed above.

Murakami et al. in view of Fukuda et al. or Oishi et al. fail to teach the continuous corner part of second electrode is shaped in an arc and second electrode has a curved convex surface shape.

Art Unit: 1792

Referring to Figure 2A & 2B and column 6, lines 36-59, Nakamura et al. teaches a thin film forming apparatus wherein teach the continuous corner part of second electrode is shaped in an arc and second electrode has a curved convex surface shape since it is an alternate and equivalent shape used to process a continuous web substrate. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shape of the second electrode of Murakami et al. in view of Fukuda et al. or Oishi et al. with the continuous corner part of second electrode shaped in an arc and second electrode having a curved convex surface shape as taught by Nakamura et al. shape since it is an alternate and equivalent shape used to process a continuous web substrate. In addition, the shape of the claimed second electrode was considered a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape of the claimed second electrode was significant.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (J.P. 2002-339075) in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A) as applied to claims 1-3, 6-7, 10-11, 14, 16 and 19 above, and further in view of Fukuda et al. (U.S. 6,759,100).

The teachings of Murakami et al. in view of Fukuda et al. or Oishi et al. have been discussed above.

Murakami et al. in view of Fukuda et al. or Oishi et al. fail to teach a wherein a high frequency electric field is formed by superposing a first high frequency electric field

Art Unit: 1792

by the first electrode and the second high frequency electric field by the second electrode; a frequency  $\omega_2$  of the second high frequency electric field is higher than a frequency  $\omega_1$  of the first high frequency electric field; and a relation among an electric field intensity  $V_1$  of the first high frequency electric field, an electric field intensity  $V_2$  of the second high frequency electric field and a discharge start electric field intensity  $IV$  satisfies an inequality  $V_1 \geq IV > V_2$  or an inequality  $V_1 > IV \geq V_2$ .

Referring to Figure 2 and column 9, line 34-column 10, line 13, Fukuda et al. teaches a thin film forming apparatus wherein a high frequency electric field 41 is formed by superposing a first high frequency electric field by the first electrode 35 and the second high frequency electric field 42 by the second electrode 36; a frequency  $\omega_2$  of the second high frequency electric field is higher than a frequency  $\omega_1$  of the first high frequency electric field; and a relation among an electric field intensity  $V_1$  of the first high frequency electric field, an electric field intensity  $V_2$  of the second high frequency electric field and a discharge start electric field intensity  $IV$  satisfies an inequality  $V_1 \geq IV > V_2$  or an inequality  $V_1 > IV \geq V_2$  since this would generate a plasma with high density necessary to form a layer with high quality. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify high frequency electric field of Murakami et al. in view of Fukuda et al. or Oishi et al. with first and second high frequency electric field as taught by Fukuda et al. since this would generate a plasma with high density necessary to form a layer with high quality.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (J.P. 2002-339075) in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A)

Art Unit: 1792

as applied to claims 1-3, 6-7, 10-11, 14, 16 and 19 above, and further in view of Sagawa (J.P. 63-134677A).

The teachings of Murakami et al. in view of Fukuda et al. or Oishi et al. have been discussed above.

Murakami et al. in view of Fukuda et al. or Oishi et al. fail to teach the protecting film is made from polyester.

Referring to the abstract, Sagawa teaches a thin film forming apparatus wherein the protecting film is made from polyester to prevent residues from forming on the substrate. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for the protecting film of Murakami et al. in view of Fukuda et al. or Oishi et al. to be made from polyester as taught by Sagawa since it is a material that prevents residues from forming on the substrate.

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

Art Unit: 1792

with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-3, 17, and 19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 14-16, and 29-31 of U.S. Patent No. 6,759,100 in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A).

Referring to claims 1-3, 14-16, and 29-31, U.S. Patent No. 6,759,100 discloses a thin film forming apparatus comprising: a first electrode 35 having a first discharge surface and a second electrode 36 having a second discharge surface, the first discharge surface facing opposite to the second discharge surface to form a discharge space (claims 2, 15, 30); a gas supply unit 50 for supplying a gas including a thin film formation gas to the discharge space (claims 1, 14, 29); and a power source 41 for discharging and activating the gas by applying a high frequency electric field across the discharge space (claims 1, 14, 29); and wherein a thin film is formed by exposing a substrate F to the activated gas (claims 1, 14, 29).

U.S. Patent No. 6,759,100 fails to teach a film transporting mechanism for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas

Referring to the abstract of Fukuda et al. or paragraph [0078] of Oishi et al., Fukuda et al. or Oishi et al. teaches a thin film forming apparatus using a film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas and prevent the thin film from pollution. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the first electrode and the second electrode

Art Unit: 1792

of U.S. 6,759,100 with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution.

With respect to claim 2, the thin film forming apparatus of U.S. Patent No. 6,759,100 in view of Fukuda et al. or Oishi et al. further includes wherein the film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) transports the protecting film, in contact with the discharge surface of the second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface. (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

With respect to claim 3, the thin film forming apparatus of U.S. Patent No. 6,759,100 further includes wherein the first electrode 35 and the second electrode 36 generate the high frequency electric field in the discharge space under an atmospheric pressure or a pressure near to the atmospheric pressure (claims 1, 14, 29).

With respect to claim 17, U.S. 6,759,100 discloses a thin film forming apparatus wherein the high frequency electric field is formed by superposing a first high frequency electric field by the first electrode and the second high frequency electric field by the second electrode; a frequency  $\omega_2$  of the second high frequency electric field is higher than a frequency  $\omega_1$  of the first high frequency electric field; and a relation among an electric field intensity  $V_1$  of the first high frequency electric field, an electric field intensity  $V_2$  of the second high frequency electric field and a discharge start electric field intensity  $I_V$  satisfies an inequality  $V_1 \geq I_V > V_2$  or an inequality  $V_1 > I_V \geq V_2$  (claims 1, 14, 29).



Art Unit: 1792

With respect to claim 19, the thin film forming apparatus of U.S. 6,759,100 in view of Fukuda et al. or Oishi et al. further includes wherein a width of the protecting film is set to be wider than the discharge space (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

13. Claims 1-3, 17, and 19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 7,166,335 in view of Fukuda et al. (JP 56-005975A) or Oishi et al. (J.P. 2003229299A).

Referring to claims 1-3, U.S. Patent No. 7,166,335 discloses a thin film forming apparatus comprising: a first electrode 35 having a first discharge surface and a second electrode 36 having a second discharge surface, the first discharge surface facing opposite to the second discharge surface to form a discharge space (claim 2); a gas supply unit 50 for supplying a gas including a thin film formation gas to the discharge space (claim 1); and a power source 41 for discharging and activating the gas by applying a high frequency electric field across the discharge space (claim 1); and wherein a thin film is formed by exposing a substrate F to the activated gas (claim 1).

U.S. Patent No. 7,166,335 fails to teach a film transporting mechanism for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas

Referring to the abstract of Fukuda et al. or paragraph [0078] of Oishi et al., Fukuda et al. or Oishi et al. teaches a thin film forming apparatus using a film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) for transporting a protecting film for preventing at least one of the first electrode and the second electrode from being exposed to the activated gas and prevent

Art Unit: 1792

the thin film from pollution. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide at least one of the first electrode and the second electrode of U.S. 7,166,335 with a film transporting mechanism as taught by Fukuda et al. or Oishi et al. in order to prevent the thin film from pollution.

With respect to claim 2, the thin film forming apparatus of U.S. 7,166,335 in view of Fukuda et al. or Oishi et al. further includes wherein the film transporting mechanism (Fukuda et al.-13, Oishi et al.-4) transports the protecting film, in contact with the discharge surface of the second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface second electrode and with at least a part of the surface other than the discharge surface, which continues to the discharge surface. (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

With respect to claim 3, the thin film forming apparatus of U.S. 7,166,335 further includes wherein the first electrode 35 and the second electrode 36 generate the high frequency electric field in the discharge space under an atmospheric pressure or a pressure near to the atmospheric pressure (claim 1).

With respect to claim 17, U.S. 7,166,335 discloses a thin film forming apparatus wherein the high frequency electric field is formed by superposing a first high frequency electric field by the first electrode and the second high frequency electric field by the second electrode; a frequency  $\omega_2$  of the second high frequency electric field is higher than a frequency  $\omega_1$  of the first high frequency electric field; and a relation among an electric field intensity  $V_1$  of the first high frequency electric field, an electric field intensity  $V_2$  of the second high frequency electric

Art Unit: 1792

field and a discharge start electric field intensity  $IV$  satisfies an inequality  $V1 \geq IV > V2$  or an inequality  $V1 > IV \geq V2$  (claim 1).

With respect to claim 19, the thin film forming apparatus of U.S. 7,166,335 in view of Fukuda et al. or Oishi et al. further includes wherein a width of the protecting film is set to be wider than the discharge space (Fukuda et al.-Drawing 1, Oishi et al.-Drawing 2).

### ***Response to Arguments***

14. Applicant's arguments filed January 25, 2008 have been fully considered but they are not persuasive.

15. Applicant has argued that the belt like member of Fukuda does not come in contact with at least a part of surface other than the discharge surface which continues to the discharge surface; however, Fukuda does teach the claimed limitation. As broadly claimed, claim 1 simply requires that the protecting film comes in contact with another surface (i.e. rollers) besides the discharge surface, fails to require that the other surface be part of the electrode, and the protecting film must continue from the other surface to the discharge surface. Thus, in the instant case, the other surface of Fukuda is the rollers 18 and the protecting film 13 continues from the other surface 18 to the discharge surface 10. Therefore, Fukuda satisfies the claimed requirement.

16. Applicant has argued that the coating of Oishi does not come in contact with at least a part of surface other than the discharge surface which continues to the discharge surface; however, Oishi does teach the claimed limitation. As broadly claimed, claim 1 simply requires that the protecting film comes in contact with another surface (i.e. rollers) besides the discharge

Art Unit: 1792

surface, fails to require that the other surface be part of the electrode, and the protecting film must continue from the other surface to the discharge surface. Thus, in the instant case, the other surface of Oishi is the rollers 4b and the protecting film 4 continues from the other surface 4b to the discharge surface 2. Therefore, Oishi satisfies the claimed requirement.

### ***Conclusion***

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571)272-1432. The examiner can normally be reached on M-Th (9:30 -6:00).

Art Unit: 1792

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michelle Crowell/  
Examiner, Art Unit 1792

/Parviz Hassanzadeh/  
Supervisory Patent Examiner, Art Unit 1792